

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/03624

Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:

because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

As reported in the following documents 1 and 2, there had been publicly known prior to the application of the present case a technique of obtaining human liver stem cells with the use of an antibody undergoing an immune reaction with an antigen specifically occurring in human liver stem cells (human liver precursor cells). Therefore, it cannot be regarded as a special technical feature in the meaning as defined in PCT Rule 13.2.

Thus, the group of inventions relating to the separation of proliferative human liver cells as set forth in claims 1 to 6 and the group of inventions relating to the differentiation of proliferative human liver cells as set forth in claims 7 to 10 are not considered as (continued to extra sheet)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐

The additional search fees were accompanied by the applicant's protest.

☐

No protest accompanied the payment of additional search fees.

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Continuation of Box No. II of continuation of first sheet (1)

relating to a group of inventions so linked as to form a single general inventive concept. Therefore, it is recognized that the claims of the present case have 2 groups of inventions.

Document 1: WO 00/03001 A1 (Rhode Island Hospital) 2000.01.20

Document 2: WO 00/43498 A1 (Univ. of North Carolina) 2000.07.27

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A. CLASSIFICATION OF SUBJECT MATTER

Int.C1⁷ C07K16/18, C12P21/08, C12N5/08, C12N5/18, C12N15/09,
A61L27/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.C1⁷ C07K16/18, C12P21/08, C12N5/08, C12N5/18, C12N15/09,
A61L27/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPI (DIALOG), BIOSIS (DIALOG), JSTplus (JOIS), MEDLINE (STN)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	WO 00/03001 A (Rhode Island Hospital), 20 January, 2000 (20.01.00), & EP 1097193 A1 & US 6129911 A & JP 2002-520015 A	<u>1-6, 8-10</u> 7-10
X Y	WO 00/43498 A1 (Univ. of North Carolina), 27 July, 2000 (27.07.00), & EP 1147179 A2 & US 2002/0182188 A1 & JP 2002-534974 A	<u>1-6, 8-10</u> 7-10
X	JP 61-189299 A (Nisshin Flour Milling Co.), 22 August, 1986 (22.08.86), (Family: none)	1-4
X	EP 682106 A2 (Research Development Corp. of Japan), 07 May, 1996 (07.05.96), & US 6004810 A & JP 8-112092 A	5, 6

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

- * Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed
- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search
06 May, 2003 (06.05.03)Date of mailing of the international search report
24 June, 2003 (24.06.03)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Jover, R. et al., Cytochrome P450 regulation by hepatocyte nuclear factor 4 in human hepatocytes: a study using adenovirus-mediated antisense targeting., Hepatology, Vol.33, No.3, pages 668 to 675, (2001)	7-10
Y	Stroup, D. et al., HNF4 and COUP-TFII interact to modulate transcription of the cholesterol 7alpha-hydroxylase gene (CYP7A1)., J.Lipid Res., Vol.41, No.1, pages 1 to 11, (2000)	7-10
Y	Harish, S. et al., Transcriptional activation by hepatocyte nuclear factor-4 in a cell-free system derived from rat liver nuclei., Nucleic Acids Res., Vol.29, No.5, pages 1047 to 1053, (2001)	7-10

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